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Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

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January 1948

## Test 404 Oliver Row-Crop 77 HC

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT  
 AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 404

Dates of test; October 21 to November 9, 1948  
 Name and Model of Tractor; OLIVER ROW CROP 77 H C  
 Manufacturer; THE OLIVER CORPORATION, Charles City, Iowa  
 Manufacturer's rating: Not rated

HORSEPOWER SUMMARY

	DRAWBAR	BELT
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	29.90	35.13
2. Observed maximum horsepower (tests F & B)	28.68	33.98
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings).	22.43	29.86

REMARKS

Right brake pedal return spring was missing at end of official test. Right rear axle seal leaked grease slightly during test.

FUEL, OIL, and TIME

<u>Fuel</u> Gasoline	<u>Octane</u> 74*	<u>Weight per gallon</u> 6.102
<u>Oil</u> SAE 10-10W	<u>To motor</u> 2.002	<u>Drained from motor</u> 1.473
<u>Total time motor was operated</u> 63 hours		

\* Octane rating taken from oil company's typical inspection data.

We, the undersigned, certify that this is a true and correct report of official tractor test No. 404.

L. F. Larsen  
 Engineer in Charge

C. W. Smith

L. W. Hurlbut

F. D. Yung

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All results shown on pages 2 and 3 of this report were determined from observed data and without allowances, additions, or deductions. Tests B. and F were made with carburetor set for 100% maximum belt horsepower and data from these tests were used in determining the horsepower to be developed in tests D and H, respectively. Tests C, D, E, G, H, J and K were made with an operating setting of the carburetor (selected by the manufacturer) of 98.7% of maximum belt horsepower.

B E L T   H O R S E P O W E R   T E S T S

Horse- power	Crank shaft speed  rpm	Fuel Consumption			Water used  gal per hr	Temperature		Barometer  Inches of Mercury
		gal per hr	hp-hr per gal	lb per hp - hr		Cool- ing med °F	Air °F.	

TEST B - 100% MAXIMUM LOAD - TWO HOURS

33.98	1600	2.978	11.41	0.535	0.00	177	71	29.250
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TEST C - OPERATING MAXIMUM LOAD - ONE HOUR

33.65	1604	2.920	11.52	0.530	0.00	173	69	29.278
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\*TEST D - ONE HOUR

29.90	1599	2.691	11.11	0.549	0.00	177	78	29.320
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

29.88	1600	2.675	11.17	0.546	0.00	179	80	-- --
2.46	1714	1.254	1.96	3.110	0.00	156	80	-- --
15.53	1659	1.932	8.04	0.759	0.00	163	84	-- --
31.54	1516	2.822	11.18	0.546	0.00	183	78	-- --
8.01	1695	1.549	5.17	1.180	0.00	158	76	-- --
22.93	1634	2.360	9.72	0.628	0.00	168	78	-- --
18.39	1636	2.098	8.77	0.696	0.00	168	79	29.350

\* Formerly called RATED LOAD, see HORSEPOWER SUMMARY 3, page 1.

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D R A W B A R   H O R S E P O W E R   T E S T S

Horse- power	Draw- bar Pull lb.	Speed  mph	Crank Shaft Speed  rpm	Slip on Drive Wheels  %	Fuel Consumption			Water used  gal per hr	Temperature		Barometer  Inches of Mercury
					gal per hr	hp-hr per gal	lb per hp-hr		Cool- ing med °F	air °F	

Rear wheels, tires and added weight used in Tests F, G, and H; Cast Disc wheels; 12-38, 6 ply tires and 1365 lb. added weight per wheel.

TEST F - 100% MAXIMUM LOAD - 3rd GEAR

28.68	2300	4.68	1602	3.55	----- Not Recorded -----				173	69	28.950
-------	------	------	------	------	--------------------------	--	--	--	-----	----	--------

TEST G - OPERATING MAXIMUM LOAD

27.90	4079	2.56	1596	7.57	----- Not Recorded -----				174	73	28.905
27.82	2990	3.49	1606	4.93	----- Not Recorded -----				177	74	28.940
28.27	2258	4.70	1606	3.41	----- Not Recorded -----				172	69	28.950
27.01	1633	6.20	1600	2.56	----- Not Recorded -----				174	72	28.945
26.82	1376	7.31	1598	1.91	----- Not Recorded -----				178	74	28.905
24.24	704	12.91	1605	0.89	----- Not Recorded -----				174	75	28.900

\*TEST H - TEN HOURS - 3rd GEAR

22.57	1801	4.70	1600	2.94	2.558	8.82	0.692	0.00	156	42	28.930
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TEST J - OPERATING MAXIMUM LOAD - 3rd GEAR

28.59	2311	4.64	1604	5.78	----- Not Recorded -----				156	40	28.935
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TEST K - OPERATING MAXIMUM LOAD - 3rd GEAR

Lightest weight wheels and smallest tires suggested by manufacturer. All added weight removed from tractor (liquids, cast iron, or any other added forms.)

20.50	2002	3.86	1600	15.50	----- Not Recorded -----				156	41	28.935
-------	------	------	------	-------	--------------------------	--	--	--	-----	----	--------

\* Formerly called RATED LOAD; see POWER SUMMARY 3, page 1.

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TIRES, WHEELS, and WEIGHT

	Tests F, G, & H	Test J	Test K
Rear Wheel; Type (each)	Cast Disc	Cast Disc	Pressed Steel
Liquid Ballast	630 lb	None	None
Added Cast Iron	735 lb	None	None
Rear Tires; No. Size and Ply	2 12-38 6 ply	2 12-38 6 ply	2 10-38 4 ply
Type of Tread	Farm Tractor	Farm Tractor	Champion Ground Grip
Make	U. S. Royal	U. S. Royal	Firestone
Air Pressure	18 lb	16 lb	12 lb
Front Wheel; Type (each)	Pressed Steel	Pressed Steel	Pressed Steel
Liquid Ballast	None	None	None
Added Cast Iron	None	None	None
Front tires; No. Size & Ply	2 5.50-16 4 ply	2 5.20-16 4 ply	2 5.50-16 4 ply
Type of Tread	Multi-Ring	Multi-Ring	Multi-Ring
Make	B. F. Goodrich	B. F. Goodrich	B. F. Goodrich
Air Pressure	28 lb	28 lb	28 lb
Height of drawbar	15 inches	16 inches	13 1/2 inches
Static Weight; Rear End	6160 lb	3430 lb	2434 lb
Front End	1220 lb	1218 lb	1217 lb
Total Weight as Tested (with Operator)	7560 lb	4628 lb	3831 lb

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SPECIFICATIONS

Type Tricycle                      Serial No. 320005                      Drive Enclosed Gear

Tread width: Rear 60 in. to 92 1/2 in.                      Front 7 1/2 in. to 12 1/8 in.

Advertised speeds, miles per hour: First 2 5/8                      Second 3 1/2                      Third 4 1/2

Fourth 6                      Fifth 7                      Sixth 12 1/4                      Reverse 2 3/4 and 4 3/4

Belt pulley: Diam. 12 in.                      Face 7 1/4 in.                      RPM 992                      Belt speed 3116 fpm

Clutch: Make Borg & Beck                      Type Single plate                      Operated by Foot pedal

Seat: Upholstered type with back rest

Brakes: Make Own

Location Mounted on bull gear pinions

Gear reduction (brake drum to rear wheel) 4.692 to 1

Operated by Two foot pedals

Locked by Latches

Equalization Yes, equalizer bar serves as master brake pedal

Engine: Make, Own                      Serial No. 721398                      Type 6 cylinder, vertical

Head I                      Mounting Lengthwise                      Lubrication Pressure

Bore and stroke 3 5/16 in. x 3 3/4 in.                      Rated rpm 1600

Port diameter valves: Inlet 1 3/16 in.                      Exhaust 1 in.

Generator: Make Delco-Remy

Distributor & Coil: Make Delco-Remy                      Battery Delco

Starter: Make Delco-Remy

Carburetor: Make Marvel-Schebler                      Model TSX-363                      Size 7/8 in.

Governor: Make Own                      Type Centrifugal, variable speed

Air Cleaner: Make Donaldson                      Type Oil washed wire screen

Oil Filter: Make Michiana                      Type Replaceable, waste-packed element

Cooling medium temperature control: Thermostat